

# MONTANA

# *Wildlife*

August-1963—Montana Fish and Game Department Official Publication  
Information-Education Division





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# Montana Snakes



PHOTO—LLOYD CASAGRANDA

S. E. WEEKS and DR. C. V. DAVIS

Montana State College

Snakes are such timid, silent, and nocturnal animals that it is usually only the prying eyes of youngsters that discover them. Snake-curious youngsters naturally seek information from, quite often, their snake-ignorant parents. As a result they sometimes get scolded, misinformed or over-cautioned to the point that they lose their snake curiosity and in turn eventually become snake-ignorant parents. The infamy directed toward serpents in the Bible coupled with their stealthy legless movements tend to build up attitudes of repulsion in the minds of many people. Scores of interesting facts and observations are in store, however, for those who are willing to put foolish prejudices aside and lend a curious eye to this lowly group.

Ten kinds of snakes inhabit Montana. These include the rubber boa, two kinds of racers, the bull snake, milk snake, hog-nosed snake, three kinds of garter snakes and the rattlesnake. These may be quite

easily distinguished, even in the field. Positive identification, of course, is necessary before one can seek additional information in literature.

The only poisonous snake in Montana is the prairie rattlesnake and even it is beneficial from the standpoint of its rodent diet. Most of our snakes are known to occasionally nip people who molest them but their teeth are quite small and their bites harmless (exception of the rattler) unless the small wounds become infected. The greatest pacifist is the little rubber boa which is found in many of our western mountain valleys. It can hardly be forced into an aggressive act except by its natural prey.

There is no evidence to support the common belief that snakes swallow their young to protect them. If they swallow their young they digest them. Many snakes eat other snakes including their



own kind. Several of our species bear their young alive. An inspection of the body cavity of one of these, such as a rattlesnake, garter snake or boa, might show live young in the uterus which could be carelessly confused with the stomach and help lead to this erroneous concept of maternal protection.

The common and scientific names used in this paper follow the 1953 "Checklist of North American Amphibians and Reptiles" by Karl P. Schmidt. Descriptions are based largely upon direct observations of Montana specimens. The specific locations on the range maps are from the few specimens now in the Vertebrate Museum at Montana State College. General ranges, shaded on the range maps, are based upon the maps in "Amphibians and Reptiles of Western North America" by Robert C. Stebbins, and the "Field Guide to Reptiles and Amphibians" by Roger Conant. The identification key offered here was pre-

pared by Mr. S. E. Weeks to be used on the forms found within our state. A key is a standard device for unlocking doors to the identity of unknown specimens.

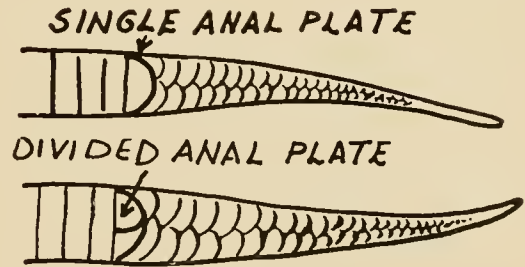
To illustrate the use of this key consider a Montana snake with a pointed tail, turned up snout, and blotches on its back. A look at the key tells us that the snake does not fit "1a" and does fit "1b". Looking to the right of the description under "1 b" is the number "3" so we now go to line "3 a" and since the snake does not have a rattle we go to "4 a" and find that its turned up snout fits this description which identifies it as a Hog-nosed snake.

Persons who discover either new species or new locality records for the state are requested to report this information to the museum for use by others working in this field. We will be happy to identify any specimens that do not fit the following key.

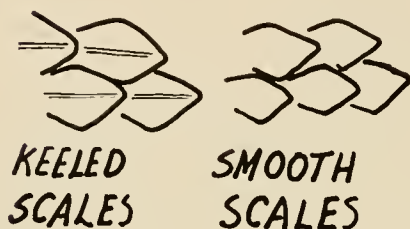
A KEY TO THE SNAKES  
OF MONTANA

- 1 a—Uniform color on upper surface (no pattern) ..... 2
- 1 b—Definite pattern of stripes or blotches on upper surface..... 3
- 2 a—Tail blunt—Rubber Boa (*Charina bottae*) ..... 4
- 2 b—Tail long and pointed—adult Racer (*Coluber constrictor*) ..... 5
- 3 a—Rattle or button on tip of tail, pit between nostril and eye—Prairie Rattlesnake (*Crotalus viridis*) .....10
- 3 b—No rattle on tip of tail or pit between nostril and eye..... 4
- 4 a—Snout flattened and conspicuously turned up — Hog-nosed Snake (*Heterodon nasicus*) ..... 6
- 4 b—Snout not so modified..... 5

- 5 a—Plate in front of anus divided, body blotched with dark saddles young Racer (*Coluber constrictor*) ..... 5



- 5 b—Anal plate not divided..... 6  
 6 a—Brightly cross-striped with red,  
 black, and yellowish-white,  
 scales smooth — Milk Snake



- (*Lampropeltis dolia*) ..... 6  
 6 b—Color not as above and scales  
 with keeled ridges..... 7  
 7 a—Alternating patches of yellow  
 and brown forming a chain ef-  
 fect down back, upper tail check-  
 ered and cross-striped near tip—  
 Bull Snake (*Pituophis catenifer*)

- 7 b—Usually with light (white, yellow,  
 or orange) longitudinal  
 stripes down back and sides (may  
 be quite indistinct)..... 8  
 8 a—Side stripe on 3rd and 4th scale  
 row above the belly scales, seven  
 scales on one side of upper lip,  
 many black blotches on back and  
 sides — Plains Garter Snake  
 (*Thamnophis radix*) ..... 9  
 8 b—Side stripe on 2nd and 3rd scale  
 rows ..... 9  
 9 a—Red blotches on back and sides,  
 7 scales on one side of upper lip,  
 eye located above 3rd and 4th lip  
 scale counting from the front—  
 Common Garter Snake (*Tham-  
 nophis sirtalis*) ..... 9  
 9 b—No red blotches on back, 8 scale  
 rows on one side of upper lip, eye  
 located above the 4th and 5th lip  
 scale — Western Garter Snake  
 (*Thamnophis elegans*) ..... 8

### RUBBER BOA (*Charina bottae*)

The rubber boa, so named because of its superficial similarity to a hard rubber rod, has an unpatterned pale tan to dark brown colored back with a light yellow belly. It has very small and unusually shiny smooth scales and a very blunt tail which is easily mistaken for its head. It has over 35 longitudinal scale rows at mid-body which is more than any other Montana snake. Tiny blackish-brown spurs are visible in males on either side of the vent. These snakes range in size from about six inches at birth to 28 inches as adults.

**Habitat:** Moist areas in or near coniferous woods, especially rocky hillsides and damp sand near streams is common habitat.

**Breeding:** These snakes give birth to 2 to 8 young each season.

**Food:** Small mammals, lizards, and insects make up the chief diet of this form. We have found chipmunks, jump-

**Rubber Boa—**Note small scales typical of all boas. Blunt tail separates this form from all other northern snakes.

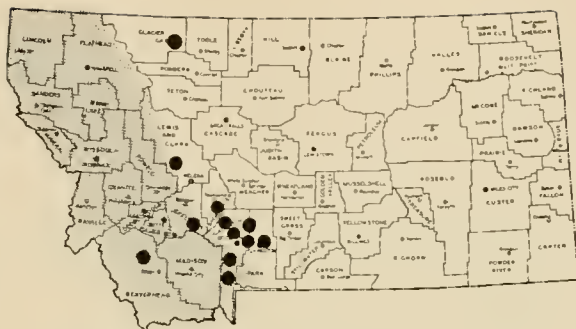


ing mice, alligator lizards, and small birds inside these snakes.

**Behavior:** The rubber boa is generally active at twilight. It can readily burrow into sand or loose soil. The blunt tail may be moved about making striking motions while the head is actually hidden under a coil of the body. For

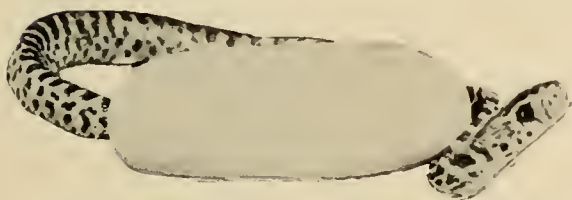
this reason the snake is sometimes called the two-headed snake. Like its infamous relatives, the boa constrictor and the pythons, this snake kills its prey by constriction—usually grabbing them by the nose and coiling quickly around them. The bones of the prey are not broken as is sometimes believed.

*Distribution:* Western Montana in the many small mountain valleys. The only subspecies reported for the state is **utahensis** more specifically known as the Rocky Mountain rubber boa.



Shaded portions of maps indicate general range of snakes. Dots represent specimens collected for the Montana State College Vertebrate Museum.

### RACER (*Coluber constrictor*)



Young racer and egg. Note the pattern which is missing in adults.

The racers are a uniform bluish to olive-brown color on the back with a gray to yellow belly. Juveniles (young) are colored very differently. They have a row of dark brown blotches on a white background and resemble the Bull Snake in pattern more closely than they resemble the adult Racer. They may be readily separated from the latter, however, by the absence of keels on the scales of their back. They are distinguished from the even-colored Rubber Boa by their long slender pointed tail. They range in size from about 10 inches when hatched to 54 inches as adults.

*Habitat:* The racer is found in open country or in breaks in timbered areas. A field or meadow along a stream is a typical location although dry prairies are also attractive to them.



*Breeding:* These snakes mate during May and lay 1 to 28 eggs in June or July. The elongated white eggs hatch in August or September, producing young from 10 to 12 inches long with a conspicuous pattern down their backs.

*Food:* Rodents, frogs, young birds, insects, and other snakes.

*Behavior:* This fast moving snake can crawl up to 3 or 4 miles per hour. Unlike most other snakes it crawls with its head raised well off the ground and is active during the daytime.

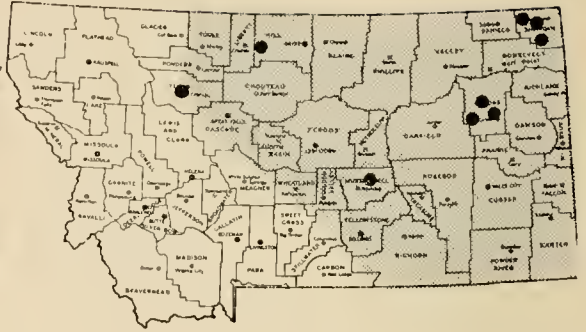
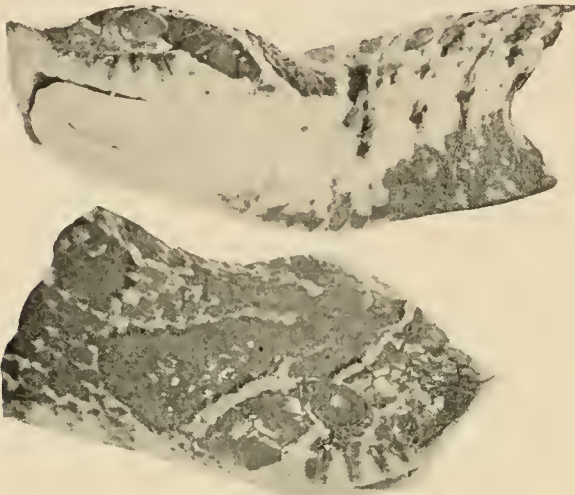
*Distribution:* The Yellow-bellied racer (subspecies **flaviventris**) is found in most of eastern Montana while the Western racer (subspecies **mormon**) is found more frequently in western Montana. The specimens recorded on the map are not separated according to subspecies.



## HOG-NOSED SNAKE

(*Heterodon nasicus*)

Turned up snout is actually used in burrowing.  
Note the conspicuous head pattern.



with grass or low bushes. Old dry stream bottoms are likely spots to find this snake.

*Breeding:* The eggs, 5-24, are laid in late July or August.

*Food:* Toads, frogs, and small reptiles.

*Behavior:* The hog-nose snake is a good burrower and can disappear quickly in sand. It digs with its spade-like snout, moving its head back and forth. When first approached this bluffer may puff himself up, hiss loudly, and feign as though to strike. However, if handled, it will play dead, rolling over on its back with mouth open and tongue out.

*Distribution:* Throughout eastern Montana except in the foothills and mountains. Our form is in the subspecies **nasicus** known as the Western hog-nosed snake.

This snake resembles a rattlesnake in color, having blackish-brown blotches down the middle of the back on a light brown ground color. It is often checkered on the sides and the belly is white with black blotches down the middle. The head is distinctively marked with stripes across the nose, one going from eye to eye. The nose is abruptly upturned which gives the snake the basis for its common name. It is a stout snake ranging in size from 7 inches at hatching to 30 inch adults.

*Habitat:* The hog-nose is almost always found in gravelly or sandy soil covered

## MILK SNAKE (*Lampropeltis doliata*)

This is a brightly cross-striped snake with a series of black-red-black cross bands which are separated by yellow stripes. Its scales are without keels and are smooth like those of the racer. Although this brightly colored snake resembles the deadly coral snake in color, it is a perfectly harmless snake separated from the range of the coral by thousands

of miles. It ranges in size from 8 inches at hatching to about three feet as a large adult.

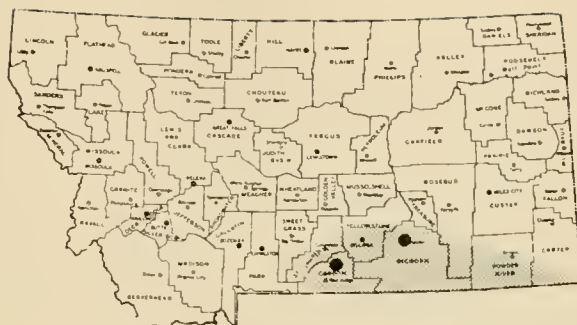
*Habitat:* They are found under flat rocks, decaying wood, and out buildings. Reports of collection vary from dense timber to city lawns. Rocky canyons along mountain streams seem to be preferred.



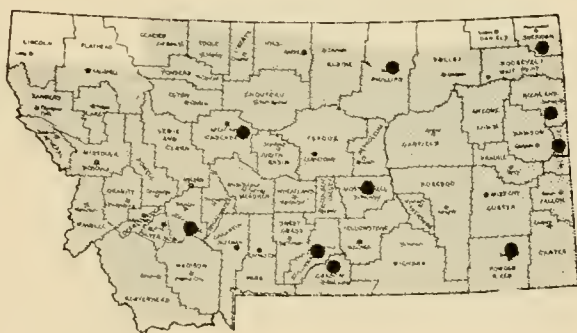
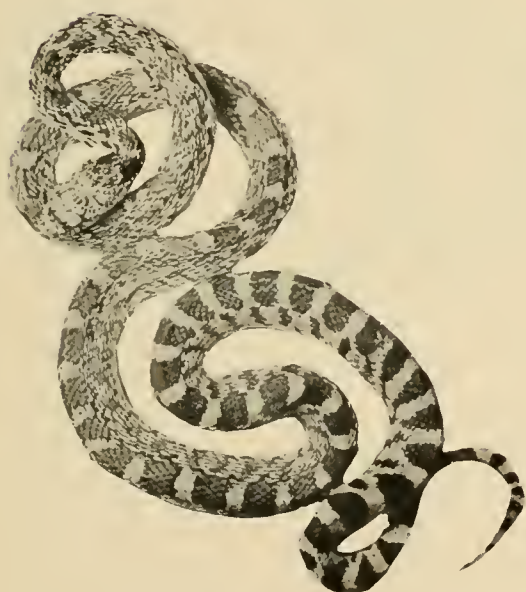
*Breeding:* This snake lays 6 to 12 eggs in decaying material even including piles of manure.

*Food:* Mice, lizards, other snakes and their eggs, and birds and their eggs.

*Distribution:* Near the southern boundary of eastern Montana. Our form is in the subspecies **gentilis** known as the Western milk snake.



## BULL SNAKE (*Pituophis catenifer*)



The bull snake, or gopher snake as it is sometimes called in Montana, is bright yellow to light brown with a row of large dark hexagonal blotches down the back. The tail is checkered becoming cross-striped at the extreme end. The scales are rough for they are covered with sharp keels. Bull snakes vary in size from 15 inches at hatching to as much as 6 feet in large adults.

*Habitat:* Prairie grass land is the preferred environment of this snake but it may be found in a wide variety of habitat.

*Breeding:* The bull snake lays from 5 to 22 eggs in July or August and the young hatch between August and October.

*Food:* Rodents, rabbits, and birds and their eggs.

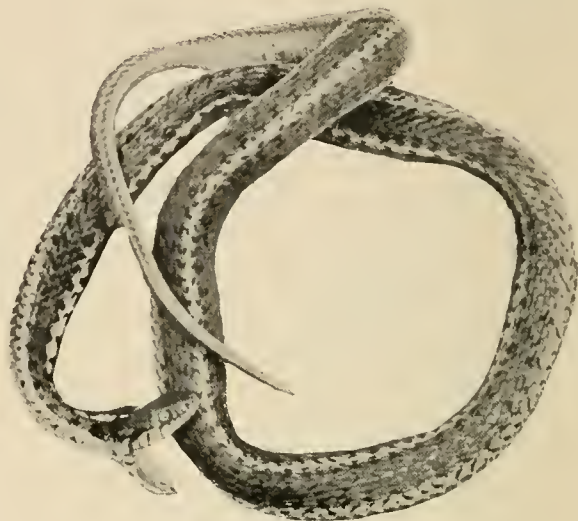
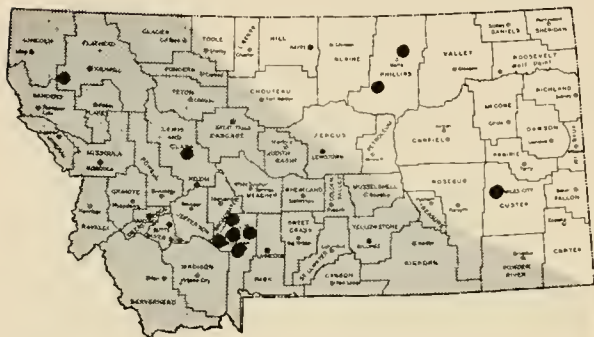
*Behavior:* The bull snake is active in the daytime. It is quite easily handled and adapts itself to domestication quite readily. When this form is approached in the wild it often vibrates its tail and makes a hissing sound not too different from the sound of a rattlesnake. Although they have been known to kill rattlesnakes on occasion, they also den up with them quite compatibly in winter and get along well in the same cages. They kill their prey by constriction.

*Distribution:* Bull snakes are scattered throughout the state. The boundary between our subspecies **sayi** the bull snake and the form found in Idaho **deserticola** the Great Basin gopher

snake could well be within our state boundary. Collecting in southwestern Montana will be necessary to determine this boundary.

## WESTERN GARTER SNAKE

(*Thamnophis elegans*)



Garter snakes were probably so named because of their striped nature which, I have been told, resembles in pattern the items of this same name worn by the well-dressed young ladies of our recent past. The western garter snake is only one of three species found in Montana. There is much variation in the color and striping of this species. Some individuals have distinct stripes while on others the stripes are hardly visible. The upper surface is usually brownish colored with three rather conspicuous rows of alternating black checks and a yellowish stripe down the middle of the back and a stripe along each side. The side stripe is on the 2nd and 3rd scale row above the belly scales. The belly is gray with black blotches on the median edge of each scale. The scales are keeled as in the rattlesnake, hog-nosed snake and the bull snake. There are usually 8 scales on each side of the upper lip which is more than in the other Montana garter snakes. The eyes in this form are located above the 4th and 5th lip scale counting from the front. These snakes range in size from 5 inches at hatching to 3 feet in large adults.

*Habitat:* This garter snake may be found in a variety of habitats ranging from water to dry land. It is generally found in the vicinity of small streams, ponds, or swamps. Rodent burrows are used as retreats by those that venture far from the tall vegetation usually found near water.

*Breeding:* From 8 to 19 young are born between June and September.

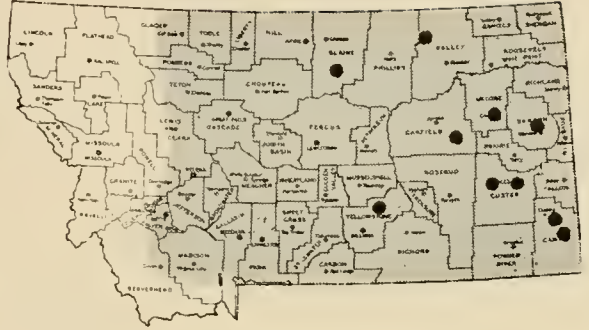
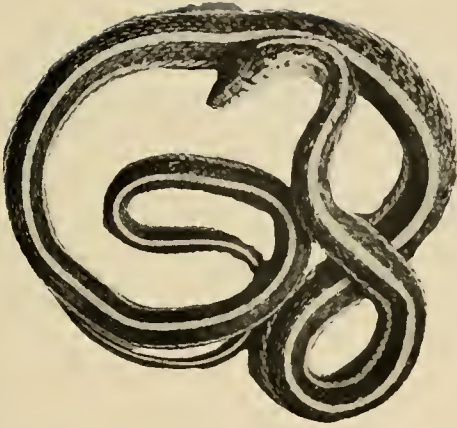
*Food:* Slugs, leeches, tadpoles, frogs, toads, mice, and fish.

*Behavior:* Frequently when handled these snakes will excrete a foul smelling yellow material. They also have a tendency to bite when first handled.

*Distribution:* Throughout the state. Our subspecies is **vagrans** which is commonly called the Wandering garter snake because of its habits.

## PLAINS GARTER SNAKE

(*Thamnophis radix*)



The plains garter snake is greenish gray to olive colored. An orange stripe running down the back is usually quite prominent. The lateral stripe is located on the 3rd and 4th scale rows separating this species from the other Montana garter snakes. The belly scales are light with a dark spot on each end. There are usually seven lip scales on each side of the upper jaw. The body scales are keeled as in all of our garter snakes. This form ranges in size from 7 inches when first hatched to 42 inches in large adults.

*Habitat:* The habitat of this form is varied but preference seems to be given

to the prairie lands. Prairie ponds and lakes attract this form where they may often be found sunning themselves on rocks or brush piles. They also tend to concentrate around farm buildings and gardens where these are available.

*Breeding:* From 5 to 92 young have been known to be born to members of this species. The young are born from July through August.

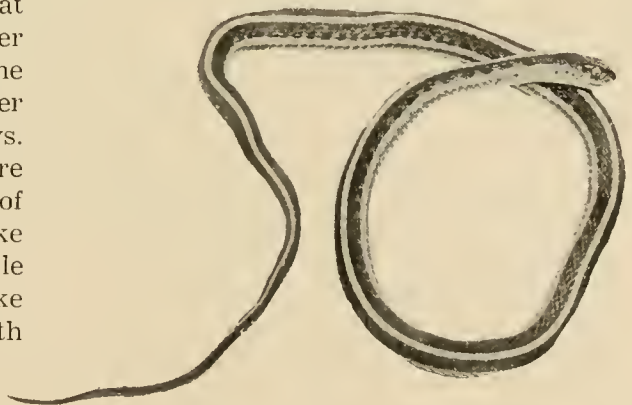
*Food:* Frogs, insects, earthworms, and mice.

*Distribution:* Eastern Montana. Our form is in the subspecies **haydeni** which Schmidt lists as the Western plains garter snake.

## COMMON GARTER SNAKE

(*Thamnophis sirtalis*)

This snake usually has conspicuous red blotches on either side of the stripe that runs down its back. The plains garter snake may sometimes show red also. The side stripes, like in the wandering garter snake, are on the 2nd and 3rd scale rows. As in the plains garter snake, there are usually only seven scales on each side of the upper lip. The eye in this garter snake is located above the 3rd and 4th lip scale counting from the front. This snake ranges in size from about 7 inches at birth to as long as 4 feet in the largest forms.





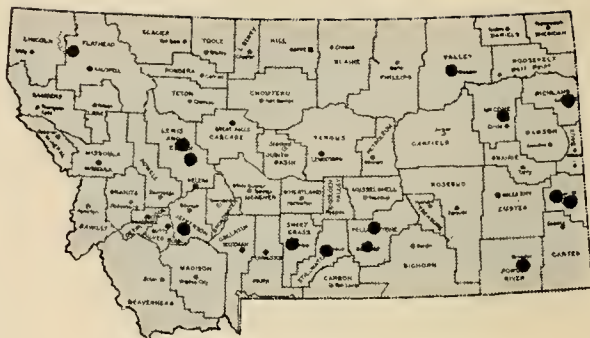
*Habitat:* The common garter snake lives in water or at its margin; few are found on dry land.

*Breeding:* From 6 to 73 young are born during July and August.

*Food:* Frogs, toads, slugs, and insects.

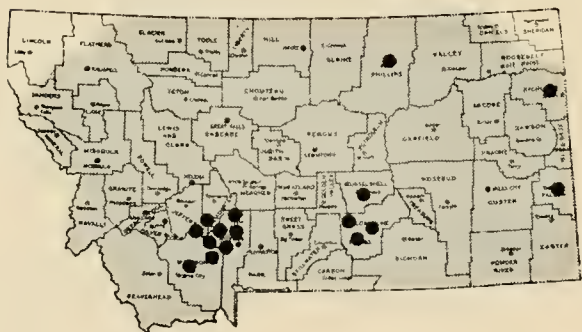
*Behavior:* Extremely fond of water, they may be found as far as 50 yards from shore.

*Distribution:* Throughout the state. The only subspecies supported by our records is the Red-sided garter snake **parietalis** but there is some evidence that Fitch's garter snake **fitchi** may also be present in extreme western Montana.



## PRAIRIE RATTLESNAKE

(*Crotalus viridis*)



The back of this rattlesnake is light brown covered with a row of squarish black bordered dark brown blotches. It has a conspicuous rattle on its tail and a pit located between the eye and nostril. The head is much broader than the neck and can be flattened noticeably. At the time of birth this form measures about 8 inches and the largest record for adults is 5 feet.

*Habitat:* They are most frequently found on rocky hillsides, bluffs, and outcroppings; however, they may also be found on open prairies, hay fields, and other cultivated lands. They are most readily found under rocks and in rodent burrows.

*Breeding:* The young are born in August and September usually 8 to 17 in number. Mating has been observed both in the spring and fall.

*Food:* Rodents, birds and frogs

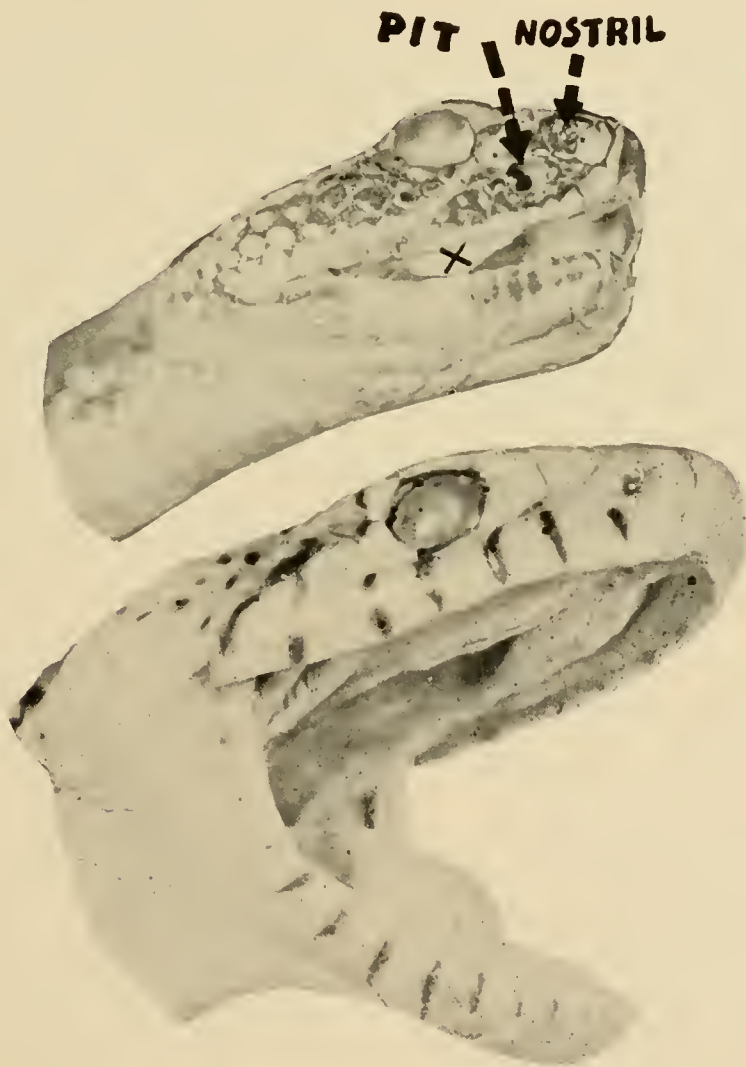
*Behavior:* The habit of coiling and rattling the tail when disturbed are the chief field characteristics of this species. This is the only poisonous snake found in Montana. Githens reported that from 154 known bites from this species only 10 were fatal. In spite of this low mortality percentage it behooves the snake hunter to handle this snake only with extreme caution. Snake bite kits are recommended for those who are curious of his habits. A common question is how to rid an area of rattlesnakes. Since this form needs to find dens for winter survival, an open-end barrel sunk in the ground near the entrance to known dens where snakes have to travel will trap them effectively in fall or spring and at least help to control their numbers. Sometimes den openings are restricted enough to per-

mit plugging them in some way to prevent the snakes from escaping the winter. Since snakes are deaf, dynamiting a den is not apt to frighten un-killed specimens from the area. Rattlesnakes are known to be somewhat immune to their own bite, as are their

enemies — the king snakes, but two Montana specimens that we forced to bite themselves died within a few hours.

*Distribution:* Throughout the state in foothills and prairies. The only sub-species reported for the state is **viridis**.

Thermal pit of rattler is absent in other Montana snakes. Fang sheath of rattler (X) covers delicate, needle sharp fangs in the upper jaw. Note the vertical pupil of the rattler and round pupil of the bull snake below.



Montana, "Land of the Big Sky," also is the land of big game. Montana sportsmen, with nine species of big game animals to hunt, reap one of the largest and most varied harvests of game on the North American continent. Hunting here comes in a wide variety of landscapes and weather conditions. Consequently, the hunter success from one season to the next is hard to predict, for conditions favorable for one type of hunting can hinder another. To get a better picture of this, a comparison is made between 1962's hunter success and hunting conditions with those of previous years.



## 1962 BIG GAME HARVEST

By FLETCHER E. NEWBY, State Game Manager

### WEATHER

Montana weather comes in for plenty of discussion anytime. Weather conditions during the hunting season of 1962 produced lots of cussin' as well as more discussion than usual—at least among deer and elk hunters in western Montana. When it comes to popularity ratings, a football coach whose team is on a losing streak has nothing over a game manager stuck with a warm dry fall in Montana's

mountains. November weather makes or breaks big game success in the mountainous districts.

Montana's wide contrasts in fall weather conditions can produce equally wide contrasts in game harvest. A look at U.S. Weather Bureau records quickly reveals the sharp contrast between the Novembers of 1961 and 1962. A further check shows that 1960 fall weather had much in common with 1962 as did 1959's with 1961.



November, 1962 averaged 3.4 degrees above normal in western Montana while November, 1961 averaged 4.4 degrees below normal. In terms of average snowfall, November, 1962 averaged only **3.3 inches** in western Montana against a 1961 average of 22.8.

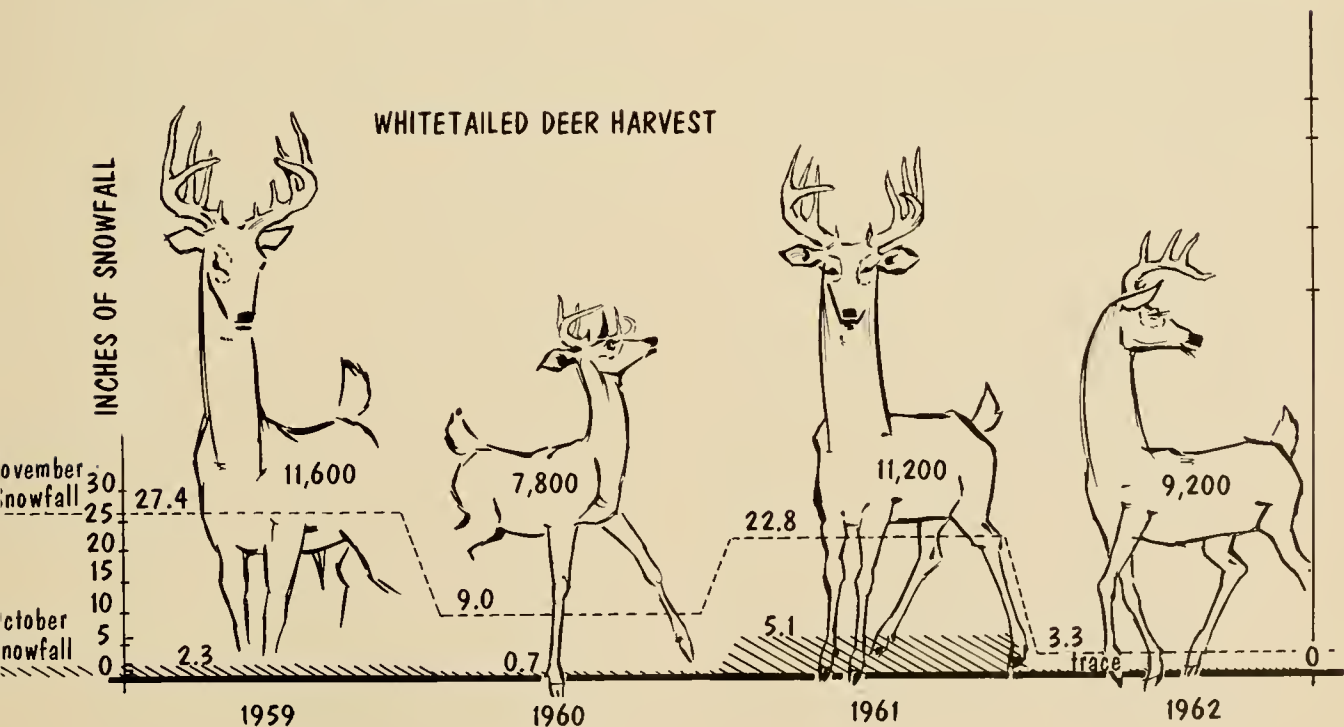
Warm, dry weather works against the hunter in at least two ways. The snapping of dry twigs, rustling of weeds, or the crunching of shallow, crusted snow makes stalking difficult. The second difficulty is that game animals can remain widely scattered pretty much like they were during the summer. Hunting seems much easier and big game more abundant when cold weather and heavy snowfall forces animals to congregate on winter range areas. Often these winter range areas are but a small fraction of the summer ranges. The bunching up of animals greatly increases the hunter's chances of jumping game. Also, since winter ranges are at lower elevations, they are more accessible by road. We might as well admit it, a lot

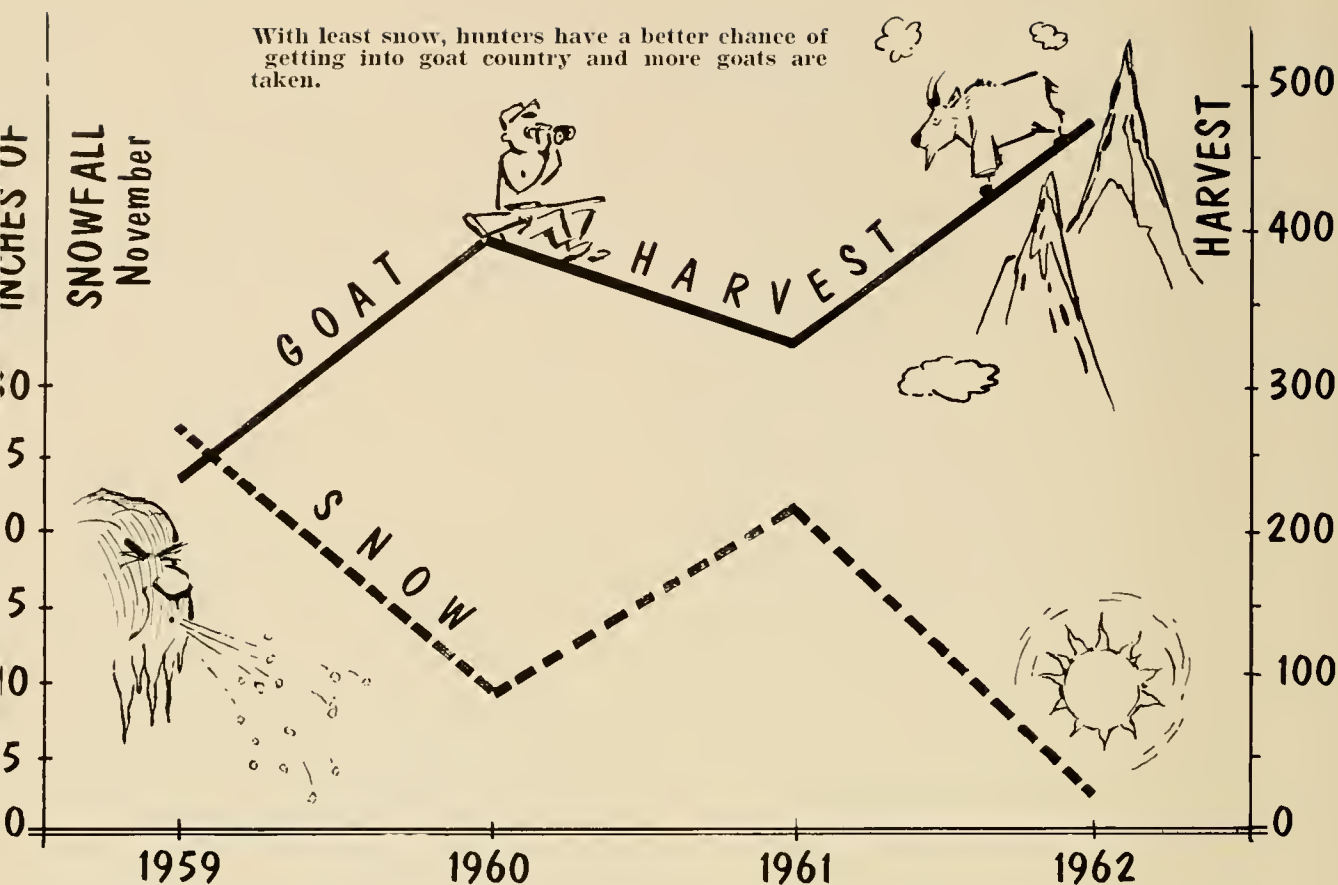
of hunters don't get far from the car anymore.

Whitetailed deer and elk harvests most clearly reflect the effect of weather on game harvest. The close correlation between snow depths and harvest is graphically indicated for whitetailed deer in the following graph. Variations in elk harvest follow this same pattern. Comparison of weather and mountain goat data, on the other hand, shows close correlation of an opposite nature. Lack of snowfall increases number of goats killed because goat areas are more accessible. Goats aren't hard to stalk once you get to them, but heavy snows in goat country virtually closes the season regardless of man-made regulations.

Another interesting side to the weather story is that the same dry weather that makes things tough for hunters in western Montana creates favorable hunting in the eastern part of the state. Rain or melting snow in the gumbo breaks and bad-

Correlation between snow depth and harvest of whitetails shows effects of snow depth on hunter take.





lands ties up even four-wheel drive travel until things dry out.

Now that we have blamed the weather for most of what happened last fall, let's take a look at some other things that go into the make-up of a hunting season.

### SEASONS, BAG LIMITS AND BOUNDARIES

The areas open to big game hunting in 1962 remained much the same as in previous years. Only National Parks, Monuments, National Wildlife Refuges and State Game Preserves and special closures are closed to big game hunting. Hunters find some type of big game hunting opportunity in nearly all parts of Montana. Bag limits also remained the same for most areas although there were several more two deer areas than in 1961.

One noteworthy addition to the big game season published on the hunter maps was the special hunt at Gardiner January 26 to

February 3. This hunt not only provided elk to about 500 previously unsuccessful hunters but also demonstrated that the opening day melee of the "firing line" of past years could be successfully controlled through the use of permits on the opening weekend.

### IMPORTANCE OF PROPER HARVEST TO BIG GAME POPULATION CONDITION

Big game hunting seasons are designed to provide an opportunity for recreational hunting. The take of big game must be managed to achieve a satisfactory balance between animals remaining after the harvest and their food supply. The success with which this goal is reached may be reflected in several attributes of big game herds which can be accurately measured. If other influences such as soil types, climatic conditions, etc. are equal, the following attributes reveal harvest rates and resultant nutritional status:

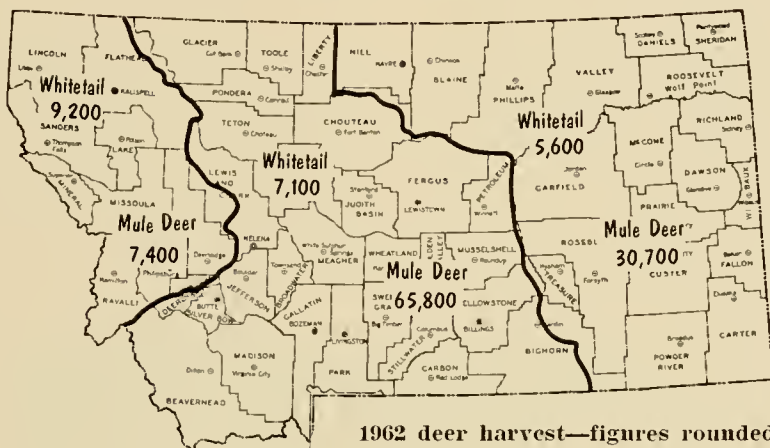
### PROPERLY HARVESTED HERD

Properly nourished  
Large body  
Good antler or horn growth  
High annual production  
More young and prime animals  
More breeding in young age classes  
More fertile  
More young born, more twinning  
More young survive  
Less loss to mortality causes other than hunting  
Less chance for disease and parasite transmission  
Less winter loss from malnutrition

### UNDER HARVESTED HERD

Undernourished  
Undersized body  
Poor antler or horn growth  
Low annual production  
More overaged animals  
Less breeding activity  
Less fertile  
Fewer young born  
Fewer young survive  
More loss to mortality causes other than hunting  
More transmission of diseases and parasites  
More "starvation" losses

## DEER HARVESTS



Mule deer usually make up about four-fifths of Montana's deer harvest. White-tails dominate the hunter take only in northwest Montana. Even though either-sex hunting is permitted in all areas, 62 percent of the 125,000 deer killed in 1962 were antlered bucks. This is more than twice as many bucks as were harvested in any year when the buck law was in force. Hunter success statewide was 85 percent, closely comparable to the 86 percent of 1960 but a slight drop from the 90 percent enjoyed in 1961. Regionally, success varied from over 100 percent in two-deer, prairie mule deer areas to about 50 percent in heavily forested, western Montana where wary whitetails more easily elude the hunter. Map above shows the regional distribution of harvest. The importance of central Montana to deer hunting is well known. Southeastern Montana also

has become worthy of special recognition as a deer area in just the last ten years.

Comparison of deer harvests with big game license sales is in Table 1 for the recent years of either sex deer hunting. During these years, many areas also were open for two deer. The consistent harvest

**TABLE 1. BIG GAME LICENSE SALES VS. DEER HARVESTS**

Year	Big Game Lic. Sales	Deer Harvests
1962	143,424	125,000
1961	139,597	129,000
1960	136,361	122,000
1959	132,028	120,300
1958	132,475	116,000
1957	127,047	134,600
1956	130,445	100,500
1955	129,735	100,000



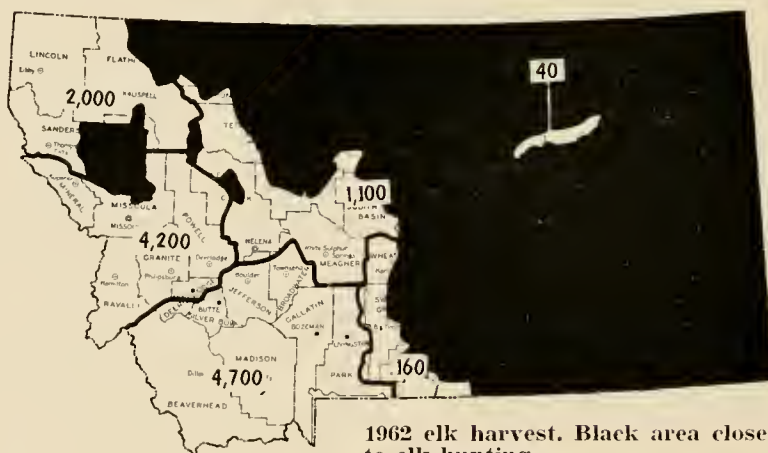
of more than 100,000 deer per year since 1954 and the consistent success of Montana hunters is clear proof that a stable breeding population of deer exists to produce such harvests. Varying weather conditions can be expected to produce differences in ease of hunting. Years with comparable hunting conditions and comparable seasons have produced very consistent results. A declining breeding stock could not sustain this picture of consistent harvests.

From the figures in Table 1 we can see that Montana has experienced only a slow rate of growth in the number of hunters over the last eight years. Since the supply of hunters is limited, two deer, either sex seasons will continue to be needed in many areas to keep deer herds in balance with available food supplies. Attempts to

increase deer herds through less liberal seasons without the firm foundation of good range conditions will cause the ultimate loss of deer breeding stocks through malnutrition. Temporary increases in deer herds achieved through restricted seasons accelerate damage to vitally important forage plants. Dramatic losses of nearly 100 dead deer per square mile have been documented for certain Montana deer winter ranges. The more subtle but equally tragic loss through reduced reproductive ability is just as effective in robbing the hunter of successful hunting.

Conscientious and articulate support from well-informed sportsmen is needed to insure continued progress in overcoming such regrettable losses in vital food supplies, valuable deer herds and exceptional hunting opportunity.

## ELK



Bull elk led the 1962 harvest of 12,200 and constituted 46 percent of the total elk taken. Between one-fourth and one-third of the bulls were spikes. Cows made up a somewhat smaller part (41%) of the total. The remaining 13 percent were calves. The age and sex aspects of the 1962 harvest compared very closely with previous years.

In Montana about half of the licensed big game hunters go after elk. Over the

years hunter success has remained relatively constant with one out of every four or five hunters getting an elk.

Elk harvests over the past ten years have fluctuated between a low of 10,100 and a high of 15,500. The ten-year average is 13,000. As pointed out, low years coincide with warm, dry falls while the peak harvests come in hunting seasons with above average snowfall which cause earlier movements of elk to winter ranges.

The most productive elk areas in Montana lie west of the Continental Divide. Figure 4 shows the regional distribution of harvest.

The future of elk hunting in Montana depends primarily upon continued availability of adequate winter range. Since only limited acreages of winter range can be purchased by the Montana Fish and Game Commission, most of the management of elk winter range is in the hands of public land management agencies and tolerant ranchers. Competition between various uses of winter range areas threaten decreases in available winter range whether public or private.

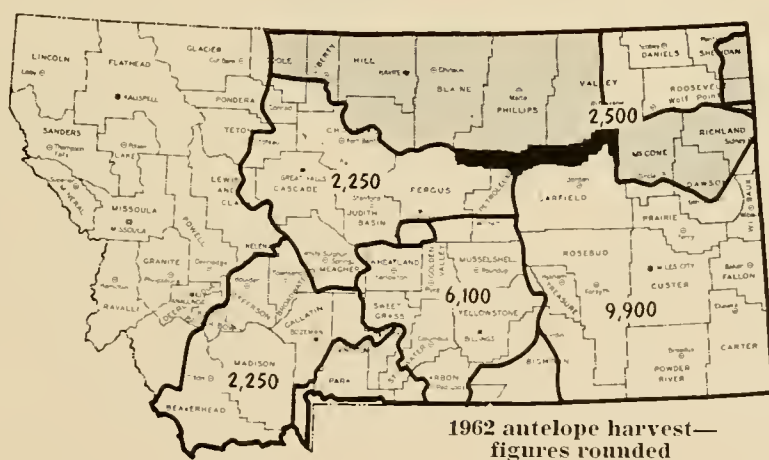
One of the most pressing problems is the continuing encroachment of forest growth on some of western Montana's best browse ranges. A critical need exists for improved range management practices for forest browse ranges. We need to know how to best handle logged areas to assure maximum browse production compatible with the timber crop rotation. In the case of the most vital winter ranges, we need to know how to per-

petuate productive browse stands in part by preventing forest regrowth.

Another factor bearing upon the future of Montana elk hunting is the continued development of roads into more and more areas of elk habitat. Ease of access can be at the same time a blessing and a curse. Road access facilitates game harvest but also calls for increased regulation of hunter activities in order to assure carry-over of adequate breeding stock. Policies of the Montana Fish and Game Commission call for maximum recreational opportunity consistent with protection of the necessary base herd. For some of the most accessible important elk herds this may mean liberal hunting opportunity for antlered bulls with the cow harvest regulated by permit-controlled hunts after the bull season.

Elk management is one of the most volatile, controversial aspects of fish and game administration. Recognition and acceptance by all parties concerned of the basic fact that **elk herds can only be as productive as forage supplies permit them to be** will do much to insure continued progress in elk management.

## ANTELOPE



Pronghorn hunters prefer bucks, consequently, better than 60 percent of the antelope kill (23,000) was males. Most of

the remainder taken were does since the smaller fawns are avoided as much as possible. Statewide hunter success has re-

mained stable at 79 percent in recent years despite increased numbers of licenses issued. South-central and south-eastern Montana are Montana's most important antelope producing regions. Most of the rest of Montana east of the Continental Divide also produces significant pronghorn hunting as can be seen in the above map.

New and more accurate census methods have afforded increases in the number of licenses issued during the last two years. From an annual average of 21,000 licenses for the four previous years, more than 27,000 licenses were issued in 1961 and over 32,000 in 1962. The 1962 harvest of 23,000 lopers is the largest since 1955 when 26,000 were taken to reduce conflicts with agriculture. Annual harvests of over 20,000 pronghorns can be sustained under existing conditions.

OTHER SPECIES

Moose, sheep and goat harvests for 1962 set new records for Montana. The bear harvest was down about one-fourth from the previous year.

Moose hunters as a rule try for a trophy

bull, so almost three-fifths of the harvest were bulls. Very few calf moose are taken by hunters. The average hunter success of 75 percent means that most hunters collected their moose. New legislation enacted by the 1963 legislature will permit future unsuccessful moose and sheep hunters to again throw their hats in the drawing ring if they return their unused licenses to the Fish and Game Commission before or at the time they make application for drawing of special licenses.

The regional distribution of the 1962 moose, sheep, goat and bear harvest is shown in the accompanying figures.

LOOKING BACK

A look at the record in Table 2 shows that the big game license buyer is getting more for his money and effort than he did 10 or 15 years ago. The average total of big game harvests of over 155,000 animals for the past five years far exceed the 1953 figure of 115,500 and the 1948 total of 42,000.

Increases in quantity have not been at the cost of quality. Montana sportsmen can find almost any kind of recreational hunting they desire; whether it be a two-

TABLE 2. MONTANA BIG GAME HARVEST — STATEWIDE  
1948 - 1962

Year	Deer	Elk	Moose	Antelope	Mt. Goat	Mt. Sheep	Black Bear	Bear Griz.	Totals
1962	125,000	12,200	610	23,000	480	80	1,300	40	162,710
1961	129,100	15,500	530	19,300	330	70	1,790	60	166,700
1960	122,000	10,100	440	15,000	400	55	1,460	30	149,485
1959	120,300	15,300	410	15,700	240	60	1,480	60	153,550
1958	116,000	12,200	470	14,000	460	70	1,060	40	144,300
1957	134,600	12,800	340	14,400	410	60	680	20	163,310
1956	100,500	11,700	280	22,800	220	40	390	20	135,950
1955	100,000	14,400	270	26,000	130	30	—	—	140,830
1954	84,300	13,400	140	20,000	50	40	—	—	117,930
1953	80,000	13,200	200	22,000	80	20	—	—	115,500
1952	53,800	6,400	210	18,100	50	0	—	—	78,560
1951	39,000	14,600	90	8,200	70	0	—	—	61,960
1950	38,300	11,300	60	7,700	40	8	—	—	57,408
1949	32,400	9,500	60	3,800	30	8	—	—	45,798
1948	29,500	9,600	50	2,800	40	2	—	—	41,992



lated progress in providing big game hunting for Montana sportsmen. Continued cooperation between Montana's sportsmen, landowners and public land management agencies will assure perpetuation of the tremendously valuable resources of soil, vegetation and wildlife.

petuation of the tremendously valuable resources of soil, vegetation and wildlife.

A map of Montana showing its county boundaries and names. The counties are labeled as follows: LINCOLN, FLATHEAD, GLACIER, TOOLE, LIBERTY, HILL, BLAINE, VALLEY, RICHMOND, SHERIDAN, MISSOULA, TETON, CHUTEAU, GREAT FALLS, FERGUS, MUSELSHELL, GARFIELD, MACONE, DAWSON, PRAIRIE, JUDITH BASIN, LEWIS AND CLARK, MISSOULA, GRANITE, SPOKANE, BUTTE, JEFFERSON, CANYON, SHELBY, DEWEESE, MADISON, BOZEMAN, GALLATIN, SILVER BURDETT, YELLSTONE, BIGHORN, POWDER RIVER, and RIVER. Some counties are highlighted with thick black outlines and numbers: LINCOLN (28), MISSOULA (273), MISSOULA (06), JEFFERSON (12), BUTTE (118), TETON (3), BUTTE (35), and BIGHORN (6). Major cities are indicated by dots and labels: LINCOLN, MISSOULA, HELENA, BUTTE, BILLINGS, and SPOKANE. Other smaller towns like GLASSBORO, LARAMIE, and CHESTNUT are also marked. The map includes geographical features like the Rocky Mountains and the Snake River. The title "MONTANA" is written across the top of the map.

A map of Montana showing county boundaries and names. A thick black line outlines a specific region in the western part of the state. County numbers 127, 83, and 402 are placed within this outlined region. County names include LINCOLN, FLATHEAD, GLACIER, TOOLE, LIBERTY, HILL, RAYNE, CHURCH, PHILLIPS, SANDERS, PONDERA, TETON, CHOUTEAU, BLAINE, SPOONER, LAKE, LEWIS AND CLARK, GREAT FALLS, CASCADE, STANFORD, JUDITH BASIN, FERGUS, PETROLIA, MISSOULA, POWELL, HELENA, WHITE SOUTHERN, SERRA, MEAGER, WHEATLAND, MUSELSHELL, GRANITE, JEFFERSON, BOZEMAN, SWEET GRASS, YELLOWSTONE, RAVALLI, BUTTE, SIVER, MASON, BEAVERHEAD, and others. City names like Missoula, Helena, Butte, and Great Falls are also marked.

A map of Montana showing county boundaries and names. Three counties are highlighted with thick black borders and numbers: Lincoln (10), Daniels (28), and Daniels (23). The map includes the following counties and their locations:

- Lincoln (10):** Located in the northwest corner of the state.
- Daniels (28):** Located in the central-north part of the state.
- Daniels (23):** Located in the south-central part of the state.

Other counties shown include: Glacier, Toole, Liberty, Hill, Blaine, Phillips, Sanders, Lake, Pondera, Chouteau, Daniels, Musselshell, Wheatland, Golden, Yellowstone, Ravalli, White, Jefferson, Gallatin, Sweet Grass, Park, and Beaverhead. Major cities and towns are marked with dots and names, such as Helena, Great Falls, and Butte.

# *Sheep Creek Sage Grouse*

Before winter can get a good grip on Big Sheep Creek Basin above Lima, Montana, the resident sage grouse go “that-away” across the mountains into Idaho. The broad basin, perched about 7,000 feet high along the Idaho-Montana border still shelters some of the finest sage grouse country in the state. But here as in many places, the sage brush is being pummeled, sprayed and rooted out to make way for more grassland.

Now it's pretty basic that where you don't have sage brush you don't have sage grouse. But just how much sage is needed, and what combination of sage-grassland is optimum for grouse is not really well understood.

These are some of the things Neil Mar-

tin hopes to determine in his master's project with Montana State College now underway for the second consecutive year. The project is being financed and assisted cooperatively by the Montana Fish and Game Department and U. S. Forest Service.

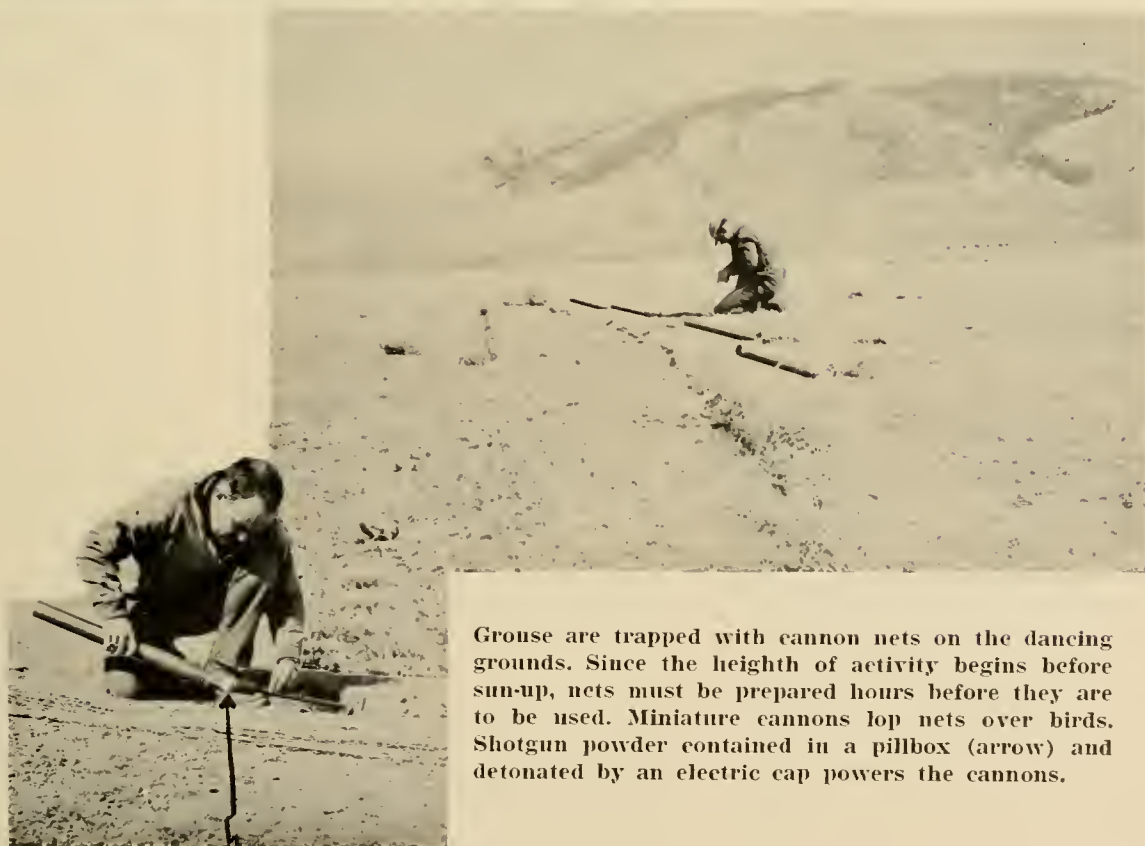
Early each spring several grouse are trapped, colored, and banded so that a record of their activities can be kept during summer months. Young birds and adults that can be netted during the spring are also marked and/or banded. It will sure be a big help in learning more about sage grouse if hunters will return to the Fish and Game any tags from grouse that are shot in this area. Tag returns are extremely important to a project of this sort!

**This is Big Sheep Creek Basin. Just across the snow-covered mountains lies Idaho. The basin is composed of BLM, Forest Service, and private lands.**





Early spring finds the big boomers, largest native grouse, congregated on ancestral mating grounds. Cocks make quite a show of themselves at this time. Amorously, they strut about with tail spread and wings stiffly drooping. Wolf calls resemble liquid "ploinks" as air is released from inflated air sacs.



Grouse are trapped with cannon nets on the dancing grounds. Since the height of activity begins before sun-up, nets must be prepared hours before they are to be used. Miniature cannons lop nets over birds. Shotgun powder contained in a pillbox (arrow) and detonated by an electric cap powers the cannons.



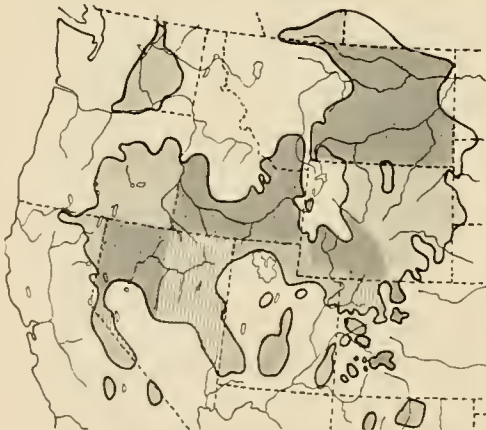


In the crisp greyness of pre-dawn, trapped birds are quickly gathered and put into sacks. Often birds near the net's edge fight their way out before they can be caught or sacked up.

Each grouse is leg banded and painted with aniline dye. Different colors represent differences in age and sex. Some re-trapped birds still had a few colored feathers from summer of 1962.



Sage grouse once inhabited vast areas of the North American great plains and prairie lands. The map shows primary sage grouse range. Vertical lines show where sage grouse are generally decreasing. Dotted areas indicate stable numbers while diagonally lined areas show where grouse are generally increasing.



Sage brush gives way to grassland in this pasture of about 1200 acres. Each year both private and public lands are treated to reduce or eradicate sage brush. Without sage brush, sage grouse cannot persist.



# Birds of Montana

Prepared by Dr. C. V. DAVIS  
Zoology and Entomology Dept.  
Montana State College  
Bozeman



All birds listed have been or are in Montana—some as transients and some as permanent residents. Bold face numbers indicate birds which are not protected by either federal or state law. A regulated hunting season is opened on some protected species.

## Symbols

- \*—Seldom reported.
- \*\*—Only a few state records.
- #—Study skins in MSC Museum.
- (Name)—Based on sight records only.
- B—Breeding records established.
- S—Summer but no breeding record.
- W—Regular wintering bird.
- w—Occasionally winters.
- M—Spring and fall migrant only.
- —Lines separate the families.
- Int.—Introduced species.
- (Number)—Page ref. to Peterson's 1961  
Field Guide to Western Birds.

## CHECK-LIST

1.....	Common Loon (p3)#Bw
2.....	Red-necked Grebe (p5)B
3.....	Horned Grebe (p8)B#
4.....	Eared Grebe (p8)B#
5.....	Western Grebe (p9)B#
6.....	Pied-billed Grebe (p9)B
7.....	White Pelican (p15)B#
8.....	D-c. Cormorant (p18)Bw#
9.....	Great Blue Heron (p21)Bw#
10.....	(Common Egret) (p25)**M
11.....	(Snowy Egret) (p25)**M
12.....	B-c. Night Heron (p28)#B
13.....	Least Bittern (p28)**B
14.....	American Bittern (p29)#B

15.	Wood Ibis (p29)**#M
16.	White-faced Ibis (p30)#M
17.	Whistling Swan (p31)#M
18.	Trumpeter Swan (p31)#BW
19.	Canada Goose (p32)#BW
20.	Black Brant (p33)**#M
21.	White-f. Goose (p36)*#M
22.	Snow & Blue Goose (p36)#M
23.	Ross' Goose (p37)*#M
24.	Mallard (p39)#BW
25.	Black Duck (p39)**M
26.	Gadwall (p40) #B
27.	Pintail (p40)#Bw
28.	Green -w. Teal (p41)#Bw
29.	Blue-w. Teal (p44)#B
30.	Cinnamon Teal (p44)#B
31.	Am. Widgeon (p45)#Bw
32.	Shoveler (p45) #Bw
33.	Wood Duck (p46)#B
34.	Redhead (p46) #B
35.	Ring-necked Duck (p45)*#B
36.	Canvasback (p47)#B
37.	Greater Scaup (p48)**
38.	Lesser Scaup (p49)#B
39.	Common Goldeneye (p49)#BW
40.	Barrow's G. (p49)#BW
41.	Bufflehead (p52)#B
42.	Oldsquaw (p52)*#M
43.	Harlequin Duck (p53)*B
44.	White-w. Scoter (p55)*M
45.	Surf Scoter (p55)**M
46.	Ruddy Duck (p56)#B
47.	Hooded Merganser (p57)#B
48.	Common Merganser (p60)#Bw
49.	Red-b. Merganser (p60)#B
50.	Turkey Vulture (p61)#B
51.	Goshawk (p63)#BW
52.	Sharp-s. Hawk (p63)#BW
53.	Cooper's Hawk (p64)#Bw
54.	Red-tailed Hawk (p64)#Bw
55.	Swainson's Hawk (p68)#B
56.	Rough-legged Hawk (p70)#Ws
57.	Ferruginous Hawk (p70)#B
58.	Golden Eagle (p72)#BW
59.	Bald Eagle (p73)#BW
60.	Marsh Hawk (p73)#Bw
61.	Osprey (p76)#B
62.	Gyr Falcon (p77)*#W
63.	Prairie Falcon (p77)#BW

64.	Peregrine Falcon (p78)#BW
65.	Pigeon Hawk (p78)#BW
66.	Sparrow Hawk (p79)#Bw
67.	Blue Grouse (p80)#BW
68.	Spruce Grouse (p81)#BW
69.	Ruffed Grouse (p81)#BW
70.	Willow Ptarmigan (p84)**
71.	White-t. Ptarmigan (p84)BW
72.	G. Prairie Chicken (p85)**
73.	Sharp-t. Grouse (p85)#BW
74.	Sage Grouse (p86)#BW
75.	Bobwhite (Int.) (p86)#(gone)
76.	R-n. Pheasant (Int.) (p88)#BW
77.	Chukar Int. (p88)#BW
78.	Gray Partridge(Int.)(p89)#BW
79.	Turkey (Int.) (p92)BW
80.	Whooping Crane (p92)**M
81.	Sandhill Crane (p93)B
82.	Virginia Rail (p94)Bw
83.	Sora (p94)#B
84.	(Yellow Rail) (p95)**
85.	American Coot (p96)#Bw
86.	Semipalmated P. (p100)#M
87.	(Snowy Plover) (p100)M
88.	Killdeer (p101)#Bw
89.	Mountain Plover (p101)*B
90.	(Am. Golden Plover) (p101)*M
91.	Black-b. Plover (p104)#M
92.	Ruddy Turnstone (p104)**M
93.	(Black Turnstone) (p105)**M
94.	Am. Woodcock (none)**
95.	Common Snipe (p105)#BW
96.	Long-b. Curlew (p108)#B
97.	(Whimbrel) (p108)**M
98.	Eskimo Curlew (none)**
99.	Upland Plover (p108)*#B
100.	Sp. Sandpiper (p109)#B
101.	Sol. Sandpiper (p109)#B
102.	Willet (p110)#B
103.	G. Yellowlegs (p111)B
104.	L. Yellowlegs (p111)#B
105.	Knot (p111)**M
106.	Pectoral Sandpiper (p112)#M
107.	White-r. Sandpiper (p113)**
108.	Baird's Sandpiper (p113)#M
109.	Least Sandpiper (p116)#M
110.	Dunlin (p116)**#M
111.	L-b. Dowitcher (p117)#M
112.	Stilt Sandpiper (p117)*M



113.	Semipalmated S. (p120)*M	162.	Vaux's Swift (p170)S
114.	W. Sandpiper (p121)**M	163.	White-t. Swift (p170)#B
115.	Buff-breasted S. (p121)**M	164.	(R-t. Hummingbird) (p171)*B
116.	Marbled Godwit (p121)#Mb	165.	Black-chinned H. (p172)B
117.	Hudsonian Godwit (p122)**	166.	Broad-tailed H. (p173)**M
118.	Sanderling (p122)*Mb	167.	Rufous Hummingbird (p173)#B
119.	American Avocet (p123)#B	168.	Calliope H. (p174)#B
120.	(Black-n. Stilt) (p123)**M	169.	B. Kingfisher (p177)#BW
121.	(Red Phalarope) (p124)**M	170.	Yellow-s. Flicker (p178)#B
122.	Wilson's Phal. (p124)#B	171.	R-shafted Flicker (p180)#BW
123.	N. Phalarope (p124)#M	172.	Pileated W. (p180)#BW
124.	(Parasitic Jaeger) (p125)**	173.	Red-headed W. (p184)#B
125.	Long-tailed Jaeger (p126)**	174.	Lewis' Woodpecker (p184)#BW
126.	(Glaucous Gull) (p127)**	175.	Y-b. Sapsucker (p184)#B
127.	(Western Gull) (p129)**	176.	Williamson's S. (p185)#B
128.	Herring Gull (p130)**Mb	177.	Hairy Woodpecker (p186)#BW
129.	California Gull (p130)#B	178.	Downy Woodpecker (p186)#BW
130.	Ring-billed Gull (p131)#B	179.	(White-headed W.) (p187)**
131.	Franklin's Gull (p132)#B	180.	B-b 3-toed W. (p188)BW
132.	Bonaparte's Gull (p133)M	181.	N. 3-toed W. (p188) #BW
133.	Sabine's Gull (p135)**	182.	E. Kingbird (p189)#B
134.	Forester's Tern (p136)Mb	183.	W. Kingbird (p190)#B
135.	Common Tern (p136)#B	184.	Cassin's K. (p190)#B
136.	Least Tern (p137)**	185.	(Ash-throated F.) (p193)**M
137.	Caspian Tern (p140)**M	186.	Say's Poebe (p194)#B
138.	Black Tern (p141)#B	187.	Traill's F. (p195)#B
139.	Rock Dove (p152)#BW	188.	Least F. (p195)B
140.	Mourning Dove (p153)#BW	189.	Hammond's F. (p196)#B
141.	Passenger P. (none) (extinct)	190.	Dusky Flycatcher (p196)#B
142.	Yellow-b. Cuckoo (p155)**	191.	W. Flycatcher (p197)#B
143.	Black-b. Cuckoo (p155) #B	192.	E. Wood Pewee (p200)**M
144.	Barn Owl (p156) **#	193.	W. Wood Pewee (p200)#B
145.	Screech Owl (p157)#BW	194.	Olive-sided F. (p200)#M
146.	Great Horned Owl (p159)#BW	195.	Horned Lark (p202)#BW
147.	Snowy Owl (p159)#W	196.	Voilet-green S. (p203)#B
148.	Hawk Owl (p159)**	197.	Tree Swallow (p203)#B
149.	Pygmy Owl (p160)#BW	198.	Bank Swallow (p204)#B
150.	Burrowing Owl (p162)#B	199.	Rough-winged S. (p204)#B
151.	Barred Owl (p162)**	200.	Barn Swallow (p204)#B
152.	(Spotted Owl) (p162)**	201.	Cliff Swallow (p205)#B
153.	Great Gray Owl (p163)BW	202.	Purple Martin (p205)B
154.	Long-eared Owl (p163)#BW	203.	Gray Jay (p206)#BW
155.	Short-eared Owl (p163)#BW	204.	Blue Jay (p206)#M
156.	Boreal Owl (p164)**W	205.	Stellar's Jay (p207)#BW
157.	Saw-whet Owl (p164)#BW	206.	B-b. Magpie (p208)#BW
158.	Poor-will (p165)B	207.	Common Raven (p209)#BW
159.	C. Nighthawk (p168)#B		
160.	Black Swift (p169)S		
161.	Chimney Swift (p169)S		

208. Common Crow (p210)#Bw  
 209. Pinon Jay (p210)#BW  
 210. C. Nutcracker (p211)#BW  
 211. B-c. Chickadee (p211)#BW  
 212. M. Chickadee (p212)#BW  
 213. Boreal Chickadee (p212)\*B  
 214. C-b. Chickadee (p213)\*\*SW  
 215. W-b. Nuthatch (p217)#BW  
 216. R-b. Nuthatch (p217)#BW  
 217. Pigmy Nuthatch (218)#SW  
 218. Brown Creeper (p218)#BW  
 219. Dipper (p219)#BW  
 220. House Wren (p220)#B  
 221. Winter Wren (p220)BW  
 222. Carolina Wren (p221)\*\*  
 223. L-b. Marsh Wren (p222)#BW  
 224. (S-b. Marsh Wren) (p222)\*\*M  
 225. Canon Wren (p223)S  
 226. Rock Wren (p223)#Bw  
 227. Mockingbird (p223)\*\*M  
 228. Catbird (p224)#B  
 229. Brown Thrasher (p224)#B  
 230. Sage Thrasher (p227)#B  
 231. Robin (p227)#Bw  
 232. Varied Thrush (p228)BW  
 233. Hermit Thrush (p228)#B  
 234. Swainson's T. (p228)#B  
 235. Gray-cheeked T. (p229)\*\*M  
 236. Veery (p229)#B  
 237. E. Bluebird (p229)\*\*B  
 238. W. Bluebird (p232)Bw  
 239. M. Bluebird (p232)#Bw  
 240. T. Solitaire (p233)#BW  
 241. G-c. Kinglet (p235)BW  
 242. R-c. Kinglet (p235)#BW  
 243. Water Pipit (p236)#B  
 244. Sprague's Pipit (p237)#B  
 245. Bohemian Waxwing (p237)#W  
 246. Cedar Waxwing (p237)#Bw  
 247. N. Shrike (p239)#Ws  
 248. Loggerhead S. (p239)#B  
 249. Starling (p240)#BW  
 250. Solitary Vireo (p243)B  
 251. Red-eyed Vireo (p244)#B  
 252. Philadelphia V. (p244)\*\*M  
 253. Warbling Vireo (p244)#B  
 254. B. & w Warbler (p245)\*M

255. Tennessee W. (p248)\*B  
 256. Orange-crowned W. (p248)#B  
 257. Nashville W. (p249)#B  
 258. Yellow Warbler (p251)#B  
 259. Myrtle Warbler (p252)#M  
 260. Audubon's W. (p253)#B  
 261. Townsend's W. (p253)B  
 262. Blackburnian W. (p255)\*\*M  
 263. Bay-breasted W. (p256)\*\*M  
 264. Blackpoll W. (p256)\*M  
 265. Palm Warbler (p257)\*\*M  
 266. Ovenbird (p257)#B  
 267. N. Waterthrush (p257)#B  
 268. Connecticut W. (p258)\*\*M  
 269. MacGillivray's W. (p259)#B  
 270. Yellowthroat (p259)#B  
 271. Y.-b. Chat (p259)#B  
 272. Wilson's Warbler (p260)#B  
 273. American Redstart (p261)#B  
 274. House Sparrow (p264)#BW  
 275. Boblink (p265)#B  
 276. W. Meadowlark (p265)#Bw  
 277. Yellow-headed B. (p268)#B  
 278. Redwinged B. (p268)#Bw  
 279. Baltimore Oriole (p271)\*#M  
 280. Bullock's Oriole (p271)#B  
 281. Rusty Blackbird (p272)\*Mw  
 282. Brewer's B. (272)#Bw  
 283. Common Grackle (p273)#Bw  
 284. B-h. Cowbird (p273)#B  
 285. W. Tanager (p276)#B  
 286. (Rose-b. Grosbeak) (p279)\*\*  
 287. Black-headed G. (p279)#B  
 288. (Blue Grosbeak) (p280)\*\*M  
 289. Indigo Bunting (p280)#\*\*  
 290. Lazuli Bunting (p280)#B  
 291. Dickcissel (p281)\*B  
 292. Evening Grosbeak (p282)#BW  
 293. Cassin's Finch (p283)#Bw  
 294. (House Finch) (p283)S  
 295. Pine Grosbeak (p284)#BW  
 296. Gray-c. Rosy Finch (p284)#BW  
 297. Black Rosy Finch (p285)#BW  
 298. Hoary Redpoll (p285)\*\*M  
 299. Common Redpoll (p285)#W  
 300. Pine Siskin (p286)#Bw  
 301. Am. Goldfinch (p286)#Bw



- |          |                              |          |                               |
|----------|------------------------------|----------|-------------------------------|
| 302..... | Red Crossbill (p287)#BW      | 319..... | Tree Sparrow (p299)#W         |
| 303..... | W-w. Crossbill (p288)SW      | 320..... | Chipping Sparrow (p299)#B     |
| 304..... | Grn-tailed Towhee (p288)#B   | 321..... | Clay-colored Sp. (p300)*S     |
| 305..... | Rufous-sided Towhee (p289)#B | 322..... | Brewer's Sp. (p300)#B         |
| 306..... | Lark Bunting (p290)#B        | 323..... | Field Sparrow (p301)*S        |
| 307..... | Savannah Sparrow (p290)#B    | 324..... | Harris' Sparrow (p301)*#M     |
| 308..... | Grasshopper Sp. (p290)B      | 325..... | White-crowned Sp. (p302)#B    |
| 309..... | Baird's Sparrow (p291)#B     | 326..... | White-throated Sp. (p304)M    |
| 310..... | Le Conte's Sp. (p291)*B      | 327..... | Fox Sparrow (p304)B           |
| 311..... | Sharp-tailed Sp. (p292)**S   | 328..... | Lincoln's Sparrow (p305)#B    |
| 312..... | Vesper Sparrow (p292)#Bw     | 329..... | Swamp Sparrow (p305)Mw        |
| 313..... | Lark Sparrow (p292)#B        | 330..... | Song Sparrow (p305)BW#        |
| 314..... | (Sage Sparrow) (p296)**S     | 331..... | McCown's Longspur (p306)#B    |
| 315..... | Whitewinged Junco (p297)#Bw  | 332..... | Lapland Longspur (p306)W#     |
| 316..... | Slate-colored J. (p298)#W    | 333..... | Chestnut-collared L. (p307)#B |
| 317..... | Oregon Junco (p298)#Bw       | 334..... | Snow Bunting (p307)#W         |
| 318..... | Gray-headed J. (p298)**M     |          |                               |

Ungainly "squabs" soon mature into swift, graceful doves. The dove is listed as a song bird in Montana, but in most states is an important game bird.





# 1963 FISH & GAME LEGISLATION

During the 1963 legislative session, several changes were made in fish and game laws.

Following is legislation dealing directly with fish and game which is now Montana law.

## HB36 (effective July 1, 1963)

HB36 provides that any child in the children's center at Twin Bridges, Montana may fish without a fishing license. Otherwise, children 15 or over must have a fishing license.

## HB64 (effective July 1, 1963)

This one will limit the number of special licenses that may be issued through drawings to non-residents. No more than 10% of total licenses allotted for moose, mountain sheep, and mountain goats in limited areas may be issued to non-residents during any license year.

## HB65 (effective July 1, 1963)

Under this bill, the hunter who was lucky enough to get a moose or mountain sheep license, but was unable to bag an animal, will now be able to apply for special drawings the following season. The waiting period for the successful hunters will be cut from 10 to 7 years. Unsuccessful hunters must present their unused tags either before or with their special license application. The applicant must pay as before for the special license.

Previously, moose and sheep license holders had to wait out the next ten years whether they bagged a trophy or not.

## HB72 (effective July 1, 1963)

HB72 better defines residency for the purpose of buying a resident hunting or fishing license. It should help simplify regulations and thus be an aid to law enforcement.

## HB91 (effective July 1, 1963)

Prior to this law a shipping permit had to accompany all fish and game or furs of

furbearers transported out of state. The intent of this old law was to minimize or prevent marketing of game. In some cases a shipping permit was attached to licenses; otherwise they had to be purchased at 60c each. The Fish and Game Commission feels that this law is now obsolete and imposes an unnecessary inconvenience on hunters and fishermen.

Legally taken game, fish, and furbearers (excepting beaver) which are tagged as required by law may be shipped out of state without a shipping permit. At the same time the law regulates against the shipment of illegally taken game.

## HB98 (effective Jan. 1, 1964)

This important piece of legislation will change the entire structure of the Fish and Game licensing system. Most of the changes will affect resident license buyers only.

It is anticipated that under this new system there will be some loss of revenue to the Fish and Game Department; however, because fewer and simpler license forms will be required, there will be a large savings in printing costs which will partially offset the anticipated loss of sales revenue.

Under the new licensing system that will begin with the 1964 licenses, the resident Class A fishing license will be separate from all others. Bird and bear will be combined in the resident Class A1 license which will be prerequisite for the purchase of any of the following resident big game licenses:

A2—special season bow and arrow	\$2
A3—deer, A tag	\$1
A4—deer, B tag	\$1
A5—elk tag	\$1

An antelope license will also cost an additional \$1.00 while moose (\$25), mountain goat (\$5), and mountain sheep (\$15) will remain the same as now. A Class A1 license must be held by residents before

they make application for any special license.

The only change in cost of non-resident licenses will be a charge of \$1.00 for holders of the \$100 licenses who wish to enter antelope drawings. The antelope charge will, of course, be refunded if the applicant is not successful in drawing for an antelope license.

In addition to changing the licensing structure, the new law will require that all Montana youths under 18 have had firearms safety training and received a certificate of competency before they can buy **any** hunting license. It will also limit the age of any game animal or bird hunters to twelve year-olds and over.

Previously, hunter safety training was required only of youngsters applying for a big game license. Game birds could be hunted without a license by residents under fifteen years old.

With training required of additional hunters in the safe handling of firearms, this law should help make hunting a safer sport.

#### **HB159 (effective July 1, 1963)**

HB159 provides that a warden may retire at the age of 55 and must retire when he reaches 60. This act will necessitate a larger monthly contribution by both the warden and by the state towards retirement.

Under this new law a fish and game warden may now retire with full benefits after 25 years of service. He may retire after only 20 years of service but with lesser benefits.

It is expected that this act will make law enforcement as a career more attractive.

#### **SB29 (effective July 1, 1963)**

The possession and use of salmon eggs for bait will become legal in Montana when this law goes into effect July 1. This piece of legislation will help prevent many of our out-of-state fishermen from becoming unnecessarily embarrassed. Non-residents who legally use eggs for bait in nearby states and bring them into Mon-

tana unwittingly will no longer be subject to arrest on this count. It should also simplify law enforcement and at the same time will not do any damage to our fishery, for anglers will soon learn that salmon eggs are not the superior bait many suppose them to be.

#### **SB30 (effective July 1, 1963)**

Montana's Board of Equalization will now handle registration and licensing of motorboats. To date, the Fish and Game Department has handled this.

The Fish and Game Department will still enforce the licensing laws and standards set for water safety equipment and operation.

#### **SB36 (effective immediately)**

This measure neither changes existing laws nor brings new ones into effect. It perpetuates, rather, the Commission's authority to issue \$20 deer and antelope licenses to non-resident hunters.

Resident hunting pressure just isn't adequate to properly harvest these animals in some Montana areas. Perpetuation of this law, therefore, provides a very useful and necessary management tool.

#### **SB39 (effective July 1, 1963)**

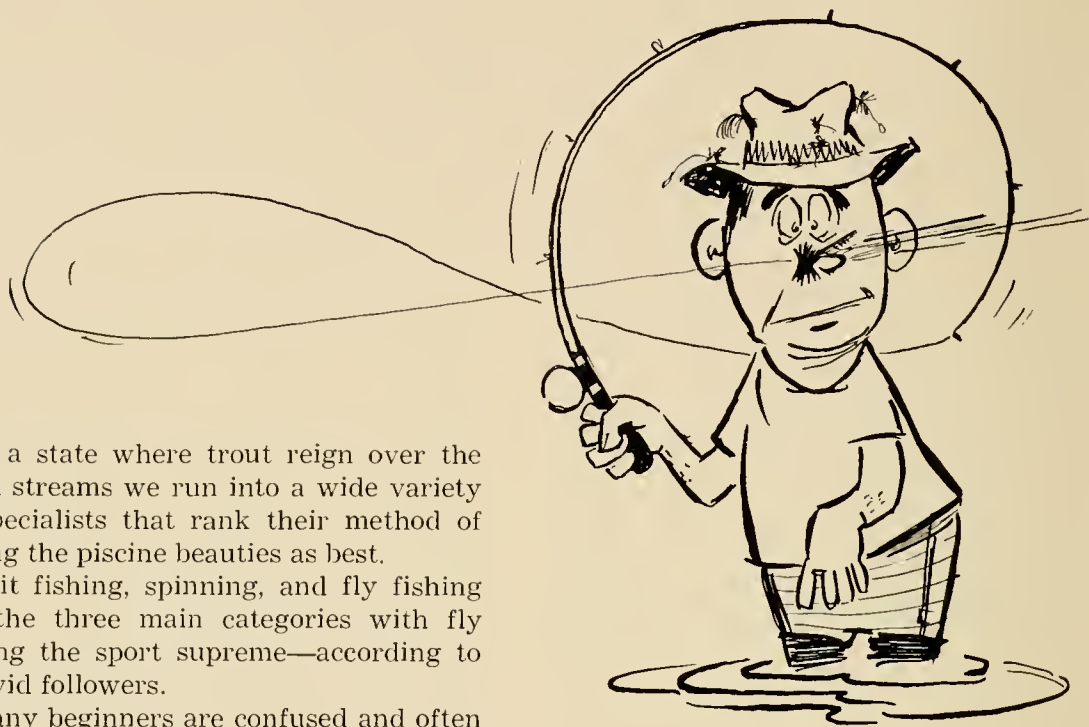
An amendment to an old law, SB39 will authorize qualified safety instructors duly authorized by a parent or guardian to supervise the use of firearms by children under 14. Until passage of this law, a child under 14 could not legally use a firearm unless his parent or legal guardian were with him. The bill is intended to facilitate hunter safety instruction.

#### **SB45 (effective July 1, 1963)**

Montana fisheries workers feel that the loss of fish habitat through stream channel alteration is the biggest single detriment to trout streams. Substitute Senate Bill 45 will for the first time give the Fish and Game Commission a legal voice in determining proposed stream alteration by state, county or municipal agency. The act does not apply to any State Water Conservation Board irrigation projects presently operating or future construction of any irrigation projects.

# *Trout Flies and Fly Fishing*

By ROGER FLIGER



In a state where trout reign over the fresh streams we run into a wide variety of specialists that rank their method of taking the piscine beauties as best.

Bait fishing, spinning, and fly fishing are the three main categories with fly fishing the sport supreme—according to its avid followers.

Many beginners are confused and often give up the idea of taking up fly fishing when a salesman or enthusiastic fly-man wheels out trays or boxes of all kinds of creations and starts talking about bivisibles, woolly worms and nymphs—sounding more like he is describing a delirium tremor than an outdoor sport.

Fly fishing and fly patterns are really quite simple when a brief discussion of the materials they are made of, what their purpose is, and how to use them, is given.

Generally speaking, there are two major divisions in trout flies. These are wet and dry flies. Some flies are tied specially so that they will float on the surface of the water. These are the dry flies. Others are made so they sink immediately and obtain depth for maximum effectiveness. These are called wet flies.

First we will consider the dry flies. Most fishermen have seen hatches of water insects when the larvae surface, break loose from their cases and emerge as adults. The insects float for awhile and

are often taken by trout. Non-water insects such as grasshoppers, crickets, etc. will fall into the water and are also readily taken.

Dry flies are made and used to imitate or resemble these insects and excite fish enough so they will strike at the flies. They are usually tied (put together) on a light hook with an abundance of game cock neck hackle (long neck feathers). The body is often made of hair, fur or chemical that traps air and insures buoyancy.

Several different types of dry flies are used. The bivisible, fan winged, spent winged, spiders, and hair winged flies are discussed.

Wet flies have general characteristics that resemble minnows, aquatic larvae or insects and anything else that might swim, fall, or crawl into a river and goes down for the third time.



Let's assume that you have purchased a fly rod, reel, line and leader. Your local sporting goods dealer can usually rig you out pretty well. You have also secured a few of the flies that are labeled trout flies and have learned to cast them with some degree of accuracy.

Dry fly fishing is perhaps the simplest method of taking trout, if you can master a simple trick. That trick is to allow the fly to float down stream naturally and without drag. Drag is usually caused by the variation in water currents. This makes the line or fly sink or drag beneath the surface. The dry fly fisherman must cast directly upstream or slightly across stream or choose water that has an even flow of surface current thus making a smooth natural float.

In areas where the fisherman can't find the exact conditions, which is often, he must spot a fish rising then work into a position downstream from the fish and get a good float over it. Sometimes the float need only be six or eight feet.

While fishing lakes a small shot or weighted wet fly can be used and sunk to the depth where the trout are cruising. Trout feeding on fresh water shrimp and other aquatic life are readily taken on sunken slow-moving wet flies.

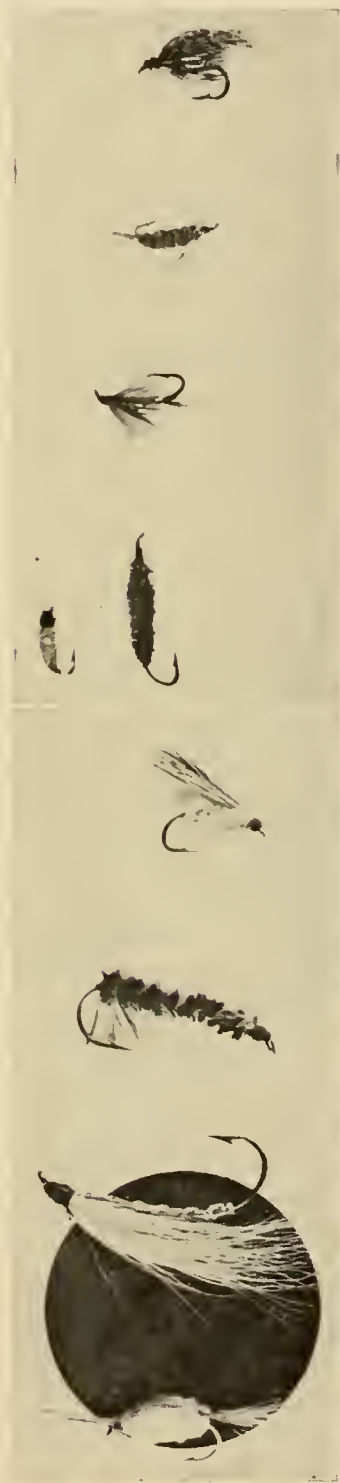
Large trout that are feeding on small forage fish can be caught on bucktails, squirrel tails and streamer flies. Fishing them deep with a slow twisting retrieve or rapidly across stream give desirable results.

Hard-to-reach inaccessible places where rock walls or trees will not allow standard fishing methods can be fished by giving line to a wet fly until it has drifted into the hard-to-get-at pool. By working the fly back and forth upstream then giving it a series of jerks it will tempt trout in the pool.

Quite often a dragging fly will scare a rising fish down.

By using line floating dressing and dry fly oil or paste the fisherman can help produce a smoother, more natural float.

**Wet flies and nymphs are sparsely tied with heavy hooks to attain depth.**



This same natural float method can be used with a sinking fly and often produces excellent results when larvae are floating downstream just prior to a catch of drakes or crane flies. The difficult part of this method is that the fisherman can't watch the lure but must watch the line or leader. If the floating line should pause or stop, the angler must tighten the line and set the hook. Large trout are often the prize for mastering this method.

The wet fly can be dragged across current beneath the surface and given a series of jerks either by taking in line with the left hand or giving the rod tip repeated jerky motions.

Sometimes the fisherman uses a combination casting upstream, allowing the fly to drift freely downstream and then setting it into action as the line begins to drag downstream.

Confused? Well, perhaps the most pleasant experience of a sport is mastering it. Once in a while you'll drag a dry fly under the water and snag a beauty. Then again, a big streamer will refuse to swim and a big brown will snap it up on the surface. That's the time all the theories go out the window.

Wet fly or dry, give 'em a try!

**Big streamers resemble minnows or small forage fish.**



**Dry flies resemble floating insects.**







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